

To be assigned U.S. National Phase of PCT/EP/03955

20. (New) The film composite of claim 13, further comprising a middle layer positioned between the upper layer and the lower layer.

21. (New) The film composite of claim 15, wherein the base of the fold divides the surface into a first region and a second region, the first region having a surface area of between 40 percent and less than 50 percent of the surface area of the upper layer.

22. (New) A sealing disc for a container closure for use on a container with an opening bounded by a peripheral edge, comprising:

an upper layer and a lower layer, each layer extending at least to the peripheral edge of the opening; and

an adhesive layer between the upper layer and the lower layer, the adhesive layer extending at least to the peripheral edge of the upper and lower layers;

wherein the upper layer includes a surface having a surface area, and an engagement device projects upwardly from the surface.

REMARKS

By present amendment, claims 1-12 were amended solely to place the claims in U.S. format, to use idiomatic English, and to eliminate any multiple dependencies. In addition, claims 13 - 22 were added, with claims 13 and 22 being independent. No new matter has been added.

After entry of this Amendment, claims 1 - 22 will be pending in the application, with claims 1, 12, 13, and 22 being independent.





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Compliance with 37 C.F.R. § 1.125

A substitute specification, excluding claims, under 37 C.F.R. § 1.125(b) is submitted herewith. Applicants state that all amendments to the specification have been made solely to place the specification in U.S. format, including inserting headings and subheadings, correcting spelling, using idiomatic English, and clarifying terms throughout the specification. In accordance with 37 C.F.R. § 1.125(b)(1), Applicants state that the substitute specification does not contain new matter. In accordance with 37 C.F.R. § 1.125(b)(2), Applicants also enclose a marked up copy of the substitute specification showing all the changes to the specification of record.

Applicants state that in view of the amendments and remarks contained herein, the application is in condition for allowance, and a notice to that effect is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, the Applicants respectfully submit that all of the claims pending in the above-identified application are in condition for allowance, and a notice to that effect is earnestly solicited.

If the present application is found by the Examiner not to be in condition for allowance, then the Applicants hereby request a telephone or personal interview to facilitate the resolution of any remaining matters. Applicants' attorney may be contacted by telephone at the number indicated below to schedule such an interview.





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The U.S. Patent and Trademark Office is authorized to charge any additional fees incurred as a result of the filing hereof or credit any overpayment to our deposit account #19-0120.

Respectfully submitted,

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Version with marking to show changes to claims

- 1. (Amended Once) A [F]film composite for a container closure for use on a container [(10)] with an opening [(11)] bounded by a peripheral edge, wherein the film composite [(30)] consists of a plurality of layers and between the upper-most layer [(33)] and the layer [(31)] beneath it there is arranged an adhesive layer [(32)] at least over a joining surface, [characterised in that] wherein the upper-most layer [(33)] of the film composite [(30)] comprises an upwardly projecting fold [(40)].
- 2. (Amended Once) The [F]film composite [according to] of claim 1, [characterised in that] wherein the film composite [(30) consists of] includes [at least three layers (31, 33, 34), of which the bottommost layer (34) is a sealing layer, the middle layer (31) is a layer producing the induction heat and the upper-most layer (33) is the layer facing the user] a sealing layer, a middle layer, and a facing layer.
- 3. (Amended Once) The [F]film composite [according to] of claim 1[or 2], [characterised in that] wherein the fold [(40)] is arranged [off-centre] off-center.
- 4. (Amended Once) The [F]film composite [according to] of claim 3, [characterised in that] wherein the fold [(40) is so arranged that it] divides the surface of the opening [(11)] of the container [(10)] into two areas, the smaller of which makes up between 40 percent and less than 50[%] percent of the surface.
- 5. (Amended Once) The [F]film composite [according to one of the preceding claims] of claim 1, [characterised in that] wherein the fold [(40) possesses] includes a fold bottom [(41)] which forms



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a straight line that passes diagonally through the entire area of the film composite zone arranged on the opening [(41)].

- 6. (Amended Once) The [F]film composite [according to one of the preceding claims] of claim 1, [characterised in that] wherein the fold [(40) possesses over its entire length] has a constant height from the fold bottom [(44)] to the fold tip [(42)].
- 7. (Amended Once) The [F]film composite [according to one of the preceding claims] of claim 1, [characterised in that] wherein the fold [(40)] extends roughly 0.5 to 2 cm from the fold bottom [(41)] to the fold tip (42).
- 8. (Amended Once) The [F]film composite [according to] of claim 7, [characterised in that] wherein the fold [(40)] extends roughly 1 to 1.5 cm from the fold bottom [(41)] to the fold tip [(42)].
- 9. (Amended Once) The [F]film composite [according to one of the preceding claims] of claim 1, [characterised in that] wherein the upper layer [(33)] forming the fold [(40)] is provided with the adhesive layer [(32)] in such a way that the adhesive layer [(32)] also covers the surface area forming the fold [(40)].
- 10. (Amended Once) The [F]film composite [according to] of claim 9, [characterised in that] wherein the adhesive layer [(32)] covers the whole area of the under side of the upper layer [(33)] of the film composite [(30)].





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11. (Amended Once) The [F]film composite [according to one of the preceding claims] of claim 1, [characterised in that] wherein the [overall area of the] film composite [(30)] is slightly greater than the opening [(11) to be covered including] extends beyond the peripheral edge [(12)].

12. (Amended Once) A [S]sealing disc for a container closure for use on a container with an opening bounded by a peripheral edge, [characterised in that] the lower areas of the sealing disc [(20)] comprise a film composite [(30) according to one of the preceding claims], comprising a plurality of layers and between the upper-most layer and the layer beneath it there is arranged an adhesive layer at least over a joining surface, wherein the upper-most layer of the film composite comprises an upwardly projecting fold.

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1	Sealing disc and film composite for a closure of a container
2	
3	The invention relates to a scaling disc and a film composite
4	SEALING DISC AND FILM COMPOSITE FOR A CLOSURE OF A
5	CONTAINER
6	
7	BACKGROUND
8	
9	1.0 Field of the Disclosure
10	The present disclosure is directed to a cap for a container closure, for use
11	on a container with an opening bounded by a peripheral edge, wherein the film
12	composite consists of a plurality of layers, and between the upper layer and the
13	layer lying beneath it there is arranged an adhesive layer at least over a joining
14	surface.
15	-
16	and, in particular, to a cap with a sealing disc.
17	
18	2.0 Related Art
19	On the closure of a container it is frequently desirable, or even necessary,
20	to provide the container mouth with a disc-shaped closure which seals off the
21	contents, -for example liquids or else substances such as foodstuffs.
22	
23	There are several reasons why said the sealing off is required. On the one
24	hand, the contents are to be protected against outside influences, for example
25	against water vapour or oxygen, o. On the other they are also to remain aroma-
26	tight. There is a further reason in the case of aggressive contents, for which as
27	optimum a leakage protection as possible must be provided optimized. Finally,
28	an originality protection for the trade may also may be provided by such a sealing

off, sincebecause a user is able to recognisze immediately whether someone has already handled the container contents beforehand.

In addition, the container closure is then also sealed with a screw cap or a similar element, which ensures a mechanical and stable sealing outside the film. On initial use the user destroys the film in order to obtain access to the contents of the container and. The user may then closes the container afterwards (unless he has already removed the entire contents) with the screw closure, -which may provide a temporary seal for the opened contents for a suitably short period of time.

The film that seals the container contents is frequently applied by means of-induction sealing. A complete sealing disc is put on for this purpose, whose bottom-mosthaving a bottom layer that forms the sealing layer. Above itthe sealing layer lies a second layer-consisting as a rule of, generally aluminium, which serves for the generation and transmission of heat during the induction process and optionally forms an additional -mechanical protection. The second layer is firmly connected to the first one firmly layer and in particular favourably for the transmission of heat. Above saidthe second, aluminium layer are then provided also further components of the sealing disc, which remain in the cap after the-opening of the screw or other rotating closure.

The removal of the film is irksome for the user in certain circumstances. He, which may requires a tool for this, for example, a knife or a pair of scissors, which. Use of a tool leads to the risk that-parts of the film will thereby fall into the container contents. In addition, a suitable tool is not always toat hand. There are also already s Screw closures whose already exist with an outside is so formed that when used the other way round they permit a partial cutting or tearing of the film here. This makes the screw cap more expensive, and it is also necessary to

give the user suitable instructions on the method,- so that he may carry out the opening correctly.

It has also already been proposed as an alternative, for example in EP-10 1697 345 A2, that the sealing disc, or at least the film composite, be provided at its edge with suitable projections or tabs, which the user may grasp, thus allowing him the user, supported in this way, to easily remove the sealed-on film. Said The extremely practical construction may not be used in every case, however, since said because the projecting tabs must after the positioning of the screw cap be able to be arranged between the screw thread and the outside of the container opening, a fact which may lead to geometrical difficulties. It is also problematical if, for example, the upper parts of the sealing disc must not exhibit any lugs, because this prevents their retention in the screw cap part. Two separate punching operations would then have to be provided for the film composite and the upper parts of the sealing disc, which leads to further costs.

It has therefore been proposed in EP 0 395 660 B1 and EP 0 534 949 B1 that the sealed-on film composite be constructed of two layers that are bonded to one another over roughly half of their area, while the other half remains free. This results in easy detachment of the half of the upper layer that is not bonded being able to be detached easily,— whereas the other area remains connected during saidthe detachment. If such a two-layered, partially bonded film composite is used on the container, the user simply has to grasp saidthe admittedly flatly positioned but easily detachable half of the upper layer! and is then able to remove the whole of the film composite by exerting a suitable force.

This rather striking idea nevertheless has some drawbacks. A mass market product is naturally involved, in which cost considerations play a very great role. A process must therefore be found- in which two layers may be connected to one

another in such a way that -they are only partially bonded. This can be brought about by a relatively laborious strip-wise lamination.

A further drawback consists in the fact that because of is due to the partially open upper layer, which causes problems arise during the filling and closing of the containers. If the screw closure is applied with rotation, the latter has a tendency to attack the film by friction. As the upper layer is supported loosely in part, it is on some occasions also pulled slightly here, which may lead immediately to uncontrolled creasing and also to buckling and to destruction. In the container filling industry, however, even minimal wastage rates are extremely undesirable because, since as a rule, the whole container then has to be rejected or may lead to complaints.

The object of the invention present disclosure is therefore to propose a sealing disc and a sealing film for a container closure which also leads to an easy opening of the film for the user, but at the same time is also convenient and reliable in manufacture and does not require additional punching operations.

Said

The object is achieved in the case of a film composite by the fact that the upper-most of the layers of the film composite comprises includes an upwardly projecting fold.

<u>SUMMARY</u>

There may be exploited first of all with such a fold all the advantages that are also exhibited by ideas, for example, from EP 0 395 660 B1 or EP 0 534 494 B1. It is not necessary to cut open the film composite or to provide tabs projecting over the edge. In the case of a positioned screw cap, the fold naturally lies flat on the top side of the remaining film composite. HTThe fold is not bonded with the

latter, however, since because the outside of the upper layer is here supported on another area of the outside of the upper layer.

The user nowmay simply grasps said the fold, raises it and then removes the entire film composite along with itthe fold. In so doing he, the user will as a rule grip one end of the fold and be able at said point to pull the film easily upward vertically, whereby a "rolling away" of the remaining edge is then obtained.

Conversely, the drawbacks from the aforementioned prior art are advantageously not encountered. The outer edge of the film composite eonsists includes, in fact, of the same, identical formation the whole way round: both the upper and the lower layers are present everywhere present. Thus, there is therefore no tendency to buckling or creasing.

The flatly positioned fold represents, in contrast to the prior art, additional material and is therefore relatively insensitive. Without an additional punching operation it does not project, even in the flat lying state, completely up to the edge side, but ends before the latter.

Particularly preferably, the fold is so arranged that it lies off-centre off-center. As a result, it will have a tendency to tilt in one direction, without its raising being affected disadvantageously in any way.

In order to simplify the gripping area and the tearing open, the fold should however remain relatively adjacent to the eentrecenter, so that a division of the overall surface is preferred such that the smaller area occupies a zone of 40% to below-\$50% of the total area.

It has proved to be particularly practical for the grasping if the fold exhibits a spacing of between 0.5 and 2 cm, in particular between 1 and 1.5 cm, between the fold bottom directly on the sealing film and the fold tip.

It is also preferable if the adhesive layer is provided at any rate in the area of the upper layer that forms the fold. In this way there will be formed in saidthe zone a contacting of adhesive layer to adhesive layer within the fold, which increases and improves the stability and firm bonding of the latter enormously; which. This has a corresponding effect on the -tearing- and tensile strength and also prevents the fold from bulging or swelling in a roughly oval shape due to external effects.

 It is particularly preferable, finally, if the adhesive layer occupies the whole area of the upper layer. This is of advantage in production engineering terms; the stripwise lamination known from the prior art, with partial provision and partial omission of an adhesive layer, is especially complicated, in fact, and the full area bonding furthermore also improves the stability and the adhesion of the entire film composite.

Further Furthermore, it is advantageous if the whole area of the sealing film is slightly greater than the opening to be covered, including the peripheral edge.—

This very slightly projecting amount of material makes it easier to pull the edge upwards by when grasping the fold. A quite small edge area is created, in fact, which is not be grasped from behind, but which during the raising of the fold is on the peripheral edge of the opening of the container without direct adhesion, and thus favourably influences the tearing process. Said The projecting edge is on the other hand of such small proportions that it is significantly smaller than, say for

1	example, the tabs from EP 0 697 345 A2 and in no circumstances comes into
2	contact with the screw cap.
3	
4	The foregoing object is achieved in the case of a sealing disc by the fact
5	that the lower layers of the sealing disc eompriseinclude the film composite
6	according to one of the above combinations of features.
7	
8	Such a sealing disc possesses all the above-mentioned advantages. [It is
9	perfectly possible to incorporate the layer forming the fold, together with said the
10	fold, straightaway immediately in the production of the sealing disc, and then to
11	use the complete component in this way in the packaging industry.
12	
13	BRIEF DESCRIPTION OF THE DRAWINGS
14	An embodiment of the invention disclosure will be described in detail
15	below with reference to the drawings, in which:
16	
17	Figure FIG. 1-shows a diagrammatic perspective view of a container with a first
18	form of execution of the sealing film;
19	
20	Figure FIG. 2- is a diagrammatic section through the sealing film from
21	FigureFIG. 13 and
22	
23	Figure FIG. 3-is a diagrammatic section through a sealing disc with a sealing film
24	of corresponding form of execution from FigureFIG. 2.
25	
26	DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS
27	A container 10 is filled, for example, with foodstuffs or agrochemicals or
28	other oxygen-sensitive goods, in particular with liquid. It possesses Container 10

1	includes an opening 11 from which the contents are to be removed at a given time.
2	The- opening 11 is surrounded by a peripheral edge 12.
3	
4	The opening Opening 11 is sealed by a film composite 30. Above the film
5	composite 30 is also located a screw cap (not shown), with which, even if the film
6	composite 30 is destroyed, the container may be sealed at least temporarily. [The
7	screw cap also serves to protect-the film composite 30 against mechanical
8	influences from outside.
9	
10	The film composite 30 possesses includes in particular three film layers
11	and two adhesive layers. This is clearly distinguishable, as shown in Figure FIG.
12	2. The A first or bottom-most layer-34 is in the sealed-on state fixed exactly on
13	the peripheral edge 12 of the container 10. On the first or bottom-most-layer 34
14	is arranged an adhesive layer-35, which connects-said first layer 34 firmly to a
15	second layer 31. The s Second layer 31 is an induction film, in particular of
16	aluminium. If itsecond layer 31 is heated by induction, said the heat is transferred
17	to the bottom-most first layer 34 and, thus seals the latter firmly on the edge 12.
18	On said second layer 31, the induction film, is provided ascaling layer 34 firmly
19	on edge 12.
20	
21	A further adhesive layer 32. T is provided on the second layer 31, which
22	is the induction film. Second adhesive layer 32 continuously connects-said layer
23	31 to upper-most layer-33 continuously.
24	
25	The layer 33 comprises includes a fold 40. The layer 33 is planar
26	outside the area of the fold 40 and is connected to the underlying layer 31
27	continuously by the adhesive layer 32. In the area of the fold 402 the whole of the
28	layer 33 is laid double starting from-the fold bottom 41 and extends like this up
29	to the-fold tip 42\frac{1}{2} and from there back again to the-fold bottom 41. Between

saidthe two doubly laid material components of the upper layer 33 is also located the adhesive layer 32, and preferably likewise two-fold. This can be brought about at the manufacturing stage by the upper layer 33 being coated -with-the adhesive layer 32 over its whole surface while still in the unfolded state, and then during the line manufacture being bent onto the layer 31 of the induction film with the addition of saidthe fold. The said fold 40 is thus particularly stable and because of the dual adhesion also bonded particularly firmly into itself. It may nevertheless have a light and filigree effect, for example because of the fact that the whole of the layer 33 is made of a transparent material.

8 ,

The fold Fold 40 extends diagonally across the film at right angles to the drawing plane. The distance between fold bottom 41 and fold tip 42 is constant here, optionally with bevels or curves in the edge area. The fold tip therefore forms a substantially straight line.

The effect that the whole of this has can be seen in Figure FIG. 1. The whole of the container mouth or opening 11 of the container 10, which mouth or opening 11 is covered by the film composite 30, is at the same time provided just off-centre off-center with the fold 40, which rises upward from the fold bottom 41 lying exactly in the plane of the opening 11 of the container 10. The f Fold 40 is shown slightly inclined, the reason for which is that it lies completely flat in the packed state, occupies little space in this way, and also offers no opportunity for gripping by the screw cap during the screwing on.

Figure FIG. 3 shows diagrammatically a complete sealing disc 20, of which the film composite 30 with its three film and two adhesive layers 31, 32, 33, 34 and [35 together with fold 40] forms the bottom-most part.

The upper portion may be a polyamide layer or another polymer.

1	Use is possible for all containers, glass, PET, PAC, PP, PVC. The sealing
2	layer beneath the <u>aluminum</u> induction film layer 31 consisting of aluminium [is] is
3	adapted to any material of the container.
4	
5	The end consumer is provided with an outstanding quality, a construction
6	that can be opened easily by means of the projecting fold, which also opens
7	reliably and does not tear.
8	
9	The filler or-packaging manufacturer is presented with the advantage that
10	such a sealing film or such a sealing disc may be used particularly reliably without
11	problems during the charging operation having to be anticipated.
12	
13	The manufacturer of the sealing film is presented with the advantage that
14	he longer has to carry out strip lamination, but- is concerned exclusively with
15	materials covering a whole area.
16	
17	The fold 40 is not formed until the punching stage. [A suitable tool of a
18	punching tool is set so that- the whole-area material arrives suitably folded.
19	

1	List of reference symbols
2	
3	10 container
4	11 opening
5	12 edge of the opening
6	
7	20 sealing dise
8	
9	30 film composite
10	31 second layer, induction film layer
1	32 second adhesive layer
12	33 upper-most layer
13	34 bottom-most layer, scaling layer
14	35 first adhesive layer
15	
16	40 fold
17	41 fold bottom
18	42 fold tip

1	Claims
2	
3	1. Film
4	What is claimed is:

1	SEADING DISC AND FILM COMPOSITE FOR A CLOSURE OF A
2	CONTAINER
3	
4	ABSTRACT
5	A sealing disc and a film composite for a container closure for use on a
6	container (10) with an opening (11) bounded by a peripheral edge, wherein the
7	film composite (30) consists of a plurality of layers and between the upper-most
8	layer (33) and the layer (31) beneath it there is arranged an adhesive layer (32) at
9	least over a joining surface,
10	characterised in that
11	the upper-most layer (33) of the film composite (30) comprises an upwardly
12	projecting fold (40).
13	
14	2. Film composite according to claim 1,
15	characterised in that
16	the film composite (30) consists of at least three layers (31, 33, 34), of which the
17	bottom-most layer (34) is a sealing layer, the middle layer (31) is a layer
18	producing the induction heat and the upper-most layer (33) is the layer facing the
19	user.
20	
21	3. Film composite according to claim 1 or 2,
22	characterised in that
23	the fold (40) is arranged off-centre.
24	
25	4. Film composite according to claim 3,
26	characterised in that
27	the fold (40) is so arranged that it divides the surface of the opening (11) of the
28	container (10) into two areas, the smaller of which makes up between 40 and less
20	than 500/ of the gurfage

1	 Film composite according to one of the preceding claims,
2	characterised in that
3	the fold (40) possesses a fold bottom (41) which forms a straight line that passes
4	diagonally through the entire area of the film composite zone arranged on the
5	opening (41).
6	
7	6. Film composite according to one of the preceding claims,
8	characterised in that
9	the fold (40) possesses over its entire length a constant height from the fold
10	bottom (44) to the fold tip (42).
11	
12	7. Film composite according to one of the preceding claims,
13	characterised in that
14	the fold (40) extends roughly 0.5 to 2 em from the fold bottom (41) to the fold tip
15	(42)
16	
17	8. Film composite according to claim 7,
18	characterised in that
19	the fold (40) extends roughly 1 to 1.5 cm from the fold bottom (41) to the fold tip
20	(42).
21	
22	9. Film composite according to one of the preceding claims,
23	characterised in that
24	the upper layer (33) forming the fold (40) is provided with the adhesive layer (32)
25	in such a way that the adhesive layer (32) also covers the surface area-forming the
26	fold (40).
27	
28	10. Film composite according to claim 9,
29	characterised in that

l	the adhesive layer (32) covers the whole area of the under side of the upper layer
2	(33) of the film composite (30).
3	11. Film composite according to one of the preceding claims,
4	characterised in that
5	the overall area of the film composite (30) is slightly greater than the opening (11)
6	to be covered including the peripheral edge (12).
7	12. Sealing disc for a container closure is provided for use on a container with
8	an- opening bounded by a peripheral edge;
9	characterised in that
10	the lower areas of the scaling disc (20) comprise a. The film composite (30)
11	according to one of the preceding claims.
12	includes a plurality of layers. An adhesive layer is arranged at least over a joining
13	surface between the upper layer and the underlying layer.
14	
15	
16	
17	•
18	
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